wound air-core coil arrangement guides outside the shaft insertion through hole on a second side of the flat commutator member;

air-core coil end portion connection lands arranged circumferentially on the second side of the type commutator member;

a shaft holder installed around the shaft insertion through hole on the second side of the flat commutator member; and

wound air-core coils installed at the wound air-core coil arrangement guides and having end portions connected to the air-core coil end portion connection lands.

2. (Amended) The rotor as claimed in claim 1, wherein the air-core coils are radially arranged at an angular interval and at least one air-core coil is a printed wiring air-core coil.

3. (Amended) The rotor as claimed in claim 2, wherein the air-core coils comprise one printed wiring air-core coil and two wound air-core coils, and the air-core coils do not overlap one another.

4. (Amended) The rotor as claimed in claim 2, wherein the air-core coils comprise two printed wiring air-core coils and one wound air-core coil, and the air-core coils do not overlap one another.

5. (Amended) The rotor as claimed in claim 1, including wound air-core coil arrangement guide apertures and reinforcement holes on the printed wiring commutator member, wherein the reinforcement holes and the wound air-core coil arrangement guide apertures are respectively connected through grooves.

6. (Amended) The rotor as claimed in claim 4, wherein the shaft holder and the wound air-core coil arrangement guides are integral with the flat commutator member.

7. (Amended) A disc-shaped eccentric rotor having at least one wound air-care coil and generating a difference in centrifugal forces by the rotation of the rotor , the rotor comprising:

a flat commutator member having a central shaft insertion through hole;

a plurality of commutator land segments located around the shaft insertion through hole on a first side of the flat commutator member;

a shaft holder installed around the shaft insertion through hole on the second side of the flat commutator member;

wound air-core coil end portion connection lands arranged circumferentially on the second side of the flat commutator member;

at least one wound air-core coil installed outside the shaft holder on the second side of the flat commutator member and having end portions connected to the wound air-core coil end portion connection lands; and

a tungsten alloy eccentric weight within the wound air-core coil on the second side of the flat commutator member and adhered to the flat commutator member with a resin.

8. (Amended) The rotor as claimed in claim 7, wherein at least one printed wiring coil is located at a position of the flat commutator member where the eccentric weight is located.

9. (Amended) A flat vibrator motor comprising:

a disc-shaped eccentric rotor having at least one air-core coil and generating a difference in centrifugal forces by the rotation of the rotor,

a shaft supporting the eccentric rotor;

a magnet providing a magnetic field for the rotor via an axial gap between the magnet and the rotor,

a brush inside the magnet providing electric power to the air-core coil through the flat commutator member, and

a housing accommodating the rotor, the shaft, the magnet, and the brush.

10. (Amended) The vibrator motor as claimed in claim 9, wherein the shaft is fixed at a first side of the housing and including a member for preventing the eccentric rotor from moving in a radial direction installed at a second side of the housing.

IN THE ABSTRACT:

Replace the Abstract with:

Abstract of the Disclosure

The present invention provides a disc-shaped eccentric rotor having at least two air-core coils. The rotor includes a flat commutator member having a central shaft insertion through hole, commutator land segments arranged around the shaft insertion through hole on a first side of the flat commutator member, wound air-core coil arrangement guides located around the shaft insertion through hole on a second side of the flat commutator member, air-core coil end portion connection lands arranged circumferentially on the second side of the flat commutator member, a shaft holder installed around the shaft insertion through hole on the second side of the flat commutator member, and wound air-core coils installed at the wound air-core coil arrangement guides and having end portions connected to the air-core coil end portion connection lands. The air-core coils of bigger sizes are uniformly arranged

on the commutator member, so that high efficiency and easy Installation can be achieved. The arrangement of the air-core coils offsets the center of gravity from the geometrical centroid of the rotor, and there is no need for an additional eccentric member. Since the printed wiring air-core coil is thinner than the wound air-core coil, an eccentric weight is installed on the printed wiring air-core coil so that a great amount of vibration may be obtained during rotation of the rotor.